ABSTRACT OF THE DISCLOSURE

A microfluidic device comprises pumps, valves, and fluid oscillation dampers. In a device employed for sorting, an entity is flowed by the pump along a flow channel through a detection region to a junction. Based upon an identity of the entity determined in the detection region, a waste or collection valve located on opposite branches of the flow channel at the junction are actuated, thereby routing the entity to either a waste pool or a collection pool. A damper structure may be located between the pump and the junction. The damper reduces the amplitude of oscillation pressure in the flow channel due to operation of the pump, thereby lessening oscillation in velocity of the entity during sorting process. The microfluidic device may be formed in a block of elastomer material, with thin membranes of the elastomer material deflectable into the flow channel to provide pump or valve functionality.

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